

Digital rectal examination in the detection of prostate cancer. *Perception of training received and competence amongst house officers in a resource challenged setting*

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Digital rectal examination (DRE) has traditionally been a cornerstone of prostate cancer diagnosis, and few dispute the need for DRE to remain in the diagnostic armamentarium of specialists in urology and coloproctology.¹ In these specialties, DRE has been shown to be useful in detecting low rectal tumors and assessing sphincteric tone as part of the urologic or neurologic examination. Outside these specialized areas, an increasing numbers of doctors may no longer view this examination as part of the routine physical examination.¹ Although the adoption of serum prostate specific antigen testing (PSA) has led to increased detection of earlier stage tumors, the combination of DRE and PSA has been shown to yield a higher positive predictive value for prostate cancer (48.6%) in men with suspicious DRE and elevated PSA compared with 22.4% for men with normal DRE and elevated PSA.² In a developing country, it is essential to have cheap sustainable detection strategies that can be improved upon as resource availability improves. In Nigeria, PSA testing is often available only in urban areas and there are challenges of quality assurance and standardization of tests, which often impair the value of this test as a screening tool for prostate cancer. The DRE, however, remains an inexpensive and easily carried out clinical examination in the hands of a well-trained doctor, irrespective of practice location. When abnormal it can firm the resolve to counsel the patient on further testing or referral to tertiary hospitals with more facilities. A study in the western world has shown significant under performance of DRE among medical students,¹ and a local study has shown that 45% of final year students have never performed DRE, and 43% had only performed between 1-2 DRE's.³ The aim of this pilot study was to assess the training received and competence of new medical graduates regarding DRE for detection of prostate cancer.

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This study was conducted in August 2008. All newly employed house officers at the University of Nigeria Teaching Hospital (UNTH), Ituku-Ozalla, Enugu State, Nigeria whom volunteered, formed the study population. Study design was a questionnaire-based survey that was self-administered and anonymous. The total study population was 108, while 101 completed and returned the questionnaire. The questionnaire was based on that developed by Fitzgerald et al¹ in 2007, as we are unaware of any externally validated questionnaire. The study comprised 18 items and 4 parts; 1. Demographic data of the responder. 2. Practical experience with DRE on patients and plastic models. 3. Knowledge of DRE features of carcinoma of the prostate. This was assessed by posing the following question and a list of possible responses that indicate malignant and non malignant prostate pathology (responder was free to indicate more than one option) "Please indicate which of the following DRE features are associated with prostate cancer" (a) Hard prostate, (b) Nodularity, (c) High riding prostate, (d) Fixity of the overlying rectal mucosa, (e) Blood on the gloved finger, (f) Tenderness, (g) Obliterated median sulcus, (h) Boggy prostate, (i) Clearly defined lateral edges. 4. Perceived hindrances/limitations to performance of DRE.

Inclusion criteria were all house officers employed at the UNTH that had resumed duty as at 01 August 2008. Exclusion criteria were all house officers that had graduated from non Nigerian medical schools, all those who had graduated more than 6 months prior to employment, and those that had carried out some clinical rotations in other hospitals prior to employment. The outcome variables were responses to questions regarding teaching of DRE in medical school, number of times DRE was performed under medical supervision with degree and cadre of supervisor, knowledge of DRE features of prostate cancer, and respondent's opinion on the necessity for new medical graduates to gain proficiency in DRE.

Data were analyzed using the Statistical Package for Social Sciences (SPSS Inc., Chicago, IL, USA) version 16. Data was presented as frequencies and percentages. The χ^2 test was used as required. Statistical significance was set at <0.05 with a 99% confidence interval.

One hundred and one questionnaires were completed and returned out of the 108 distributed, giving a response rate of 93.5%. There were 73 males and 28 females (M:F ratio 2.6:1). All 101 responders admitted that they had been taught to perform DRE, while 96% said they had performed DRE, and 4% had not. Only 8 responders (7.9%) had ever performed DRE on a plastic model (mannequin). Regarding the

number of times DRE had been performed (Table 1), roughly equal numbers of responders had performed 1-2, 3-4, and 5-9 DRE's, 4% had not performed any DRE's, while 14% had performed >10 DRE's. All of the responders felt that proficiency in DRE is an essential skill for every medical doctor, which should be acquired before graduation, and that it is useful in the detection of prostate cancer. For those who had not performed DRE, the reasons given were that DRE was distasteful in 2% and "others" in 1%. Regarding supervision, 89% (n=90) were supervised while 6.9% (n=7) were not. Four people did not respond to the question. As to the rank of supervisor the results were; consultant (32.7%, n=33), senior registrar (31.7%, n=32), registrar (26.7%, n=27), and house officer (3%, n=3). Six persons did not respond to this question. In the self-perception of competence domain, 91% felt confident in being able to identify the prostate gland, 85% a benign prostate, and 88% a malignant prostate. On features of prostate cancer on DRE, most responders correctly identified the features of malignancy, hard prostate 95%, nodularity 92%, mucosal fixity 87%, and obliterated median sulcus 61%. Graduates of 10 medical schools participated in the study, with the highest numbers from the University of Nigeria and the Nnamdi Azikiwe University, and there was no statistically significant difference in the number of responders who had performed <5 and >5 DRE's from these 2 medical schools ($p=0.643$). There was also no statistically significant difference in the number of times DRE was performed (<5 times and >5 times) between males and females ($p<0.233$).

The response rate of this study was 93.5% and compared favorably with another Nigerian study (95%),³ however, was higher than that of Fitzgerald et al (68%).¹ Most probably due to the fact that these were single institution studies, while Fitzgerald et al¹ conducted a national survey. Regarding the teaching of DRE, 95% of respondents had been taught to perform DRE, and this is in agreement with the findings of a similar study

where 94% of respondents had also been taught.³ This suggests that the teaching of DRE is adequate, given its importance in prostate cancer screening in a resource poor setting, but the fact that only 8% of respondents had ever performed a DRE on a plastic model of the male pelvis (mannequin) is in sharp contrast with other settings, where 81% had received tutorials on plastic models with 52% of those who found the tutorial helpful, actually carrying out DRE on a patient after the tutorial.⁴ This is worrisome because it would imply that there will be limited opportunity for the students to get "hands on" experience of the normal, and gain confidence before embarking on the examination of patients. It may also suggest that fewer students would feel confident to practice on patients, and may therefore limit the total number of times they are able to perform DRE's.

The assessment of the number of times DRE was performed in our series showed a near even distribution of responders indicating their DRE experience to be in the 1-2, 3-4, and 5-9 range. Only 4% of responders had never performed DRE, while 14% had performed >10 DRE's. This in contrast with the findings of Dakum et al³ where almost half (45%) had not performed DRE, and 43% had performed it only 1-2 times. This difference may be due to the fact that our study population was a diverse group whom had received training in different medical schools. Lawrentschuk et al⁴ also noted that 16.6% had not performed DRE at all, but had most responders in the 1-2, and 3-4 times group. Though our study showed a low number of DRE naïve responders, the actual number of times DRE was performed was low (<5=56%). Clearly, more efforts need to be placed on patient centered teaching, use of procedure books signed by senior tutors only, and use of mannequins that simulate the features of both benign and malignant prostates. Popadiuk et al⁵ suggested the use of rectal teaching associates (persons trained to teach DRE, including serving as live models for students to carry out DRE). We believe that such a scheme though beneficial in itself may not be appropriate in our environment, as it may be difficult to recruit persons to serve in such capacities for cultural reasons.

Supervision was provided in 89%, but consultant supervision only occurred in 32.7% of cases. This is inadequate given that the most experienced doctors should actually carry out confirmation of findings to teach effectively. This may be remedied by improving the consultant to student ratio.

In the self-perception of confidence domain, 91% felt confident in being able to identify the prostate gland,

Table 1 - Number of times responders (N=101) performed DRE.

No. of times	n	(%)
0	4	(4.0)
1-2	27	(26.7)
3-4	28	(27.7)
5-9	27	(26.7)
>10	14	(13.9)
Total	100	(99.0)

DRE - digital rectal examination. Those who failed to respond to a particular question was excluded in the analysis

85% a benign prostate, and 88% a malignant prostate. This self-confidence was supported by the responses to questions regarding features of a malignant prostate. As regards awareness of the importance of DRE, 100% of responders felt it was an essential skill to acquire before graduation, and is useful in the detection of prostate cancer.

The foregoing shows that the awareness of DRE is high amongst our graduates, the knowledge of features of malignant prostate is also good. The actual numbers of DRE performed are not high enough, as a large number of repetitions are required to become proficient. Supervision is also suboptimal, with consultant supervision accounting for only 32.7% of supervisions. This is insufficient and requires improvements in the consultant-student ratio, and greater efforts by clinical teachers. The assessment of number of times DRE was performed in our series showed that only 4% of responders reported no experience with DRE, and this is in contrast to the findings of other workers where 45% had never performed DRE.³ We believe this may be due to the fact that our study population was a varied group drawn from many medical schools, and had passed a competitive examination to become employed as interns. Limitations were the relatively small size and that it was conducted in a single institution. This study is, however, intended as a pilot that will precede a large multi-institutional survey of DRE practice in all Nigerian medical schools.

In conclusion, we believe that the awareness of the importance of DRE in prostate cancer diagnosis and its teaching is reasonable in our graduates, but the number of repetitions is inadequate to gain proficiency. Effective supervision by consultants is also suboptimal and needs to be improved upon. Measures that may achieve this

include a competency-based approach to DRE skill acquisition, and the use of plastic models to familiarize students with the examination before proceeding to patients. A larger study is needed to determine the current standard of DRE teaching and competence in Nigerian medical graduates.

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